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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR                | ATTORNEY DOCKET NO.        | CONFIRMATION NO. |
|--|-------------|-------------------------------------|----------------------------|------------------|
| 09/745,914   | 12/22/2000  | Antonius Henricus Maria Raaijmakers | PHN 17,819                 | 2618             |
| 24737  | 7590        | 01/30/2004                          |                            |                  |
| PHILIPS INTELLECTUAL PROPERTY & STANDARDS<br>P.O. BOX 3001<br>BRIARCLIFF MANOR, NY 10510 |             |                                     | EXAMINER<br>CHUNG, DAVID Y |                  |
|  |             |                                     | ART UNIT<br>2871           | PAPER NUMBER     |

DATE MAILED: 01/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                 |                    |
|------------------------------|-----------------|--------------------|
| <b>Office Action Summary</b> | Application N . | Applicant(s)       |
|                              | 09/745,914      | RAAIJMAKERS ET AL. |
|                              | Examiner        | Art Unit           |
|                              | David Y. Chung  | 2871               |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 03 November 2003.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-6 is/are pending in the application.
  - 4a) Of the above claim(s) 3 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,2 and 4-6 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. §§ 119 and 120

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.
- 13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
  - a) The translation of the foreign language provisional application has been received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

#### Attachment(s)

|  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)           | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ . | 6) <input type="checkbox"/> Other: _____                                     |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**1. Claims 1 and 2 rejected under 35 U.S.C. 103(a) as being unpatentable over Bird et al. (Sensors and Actuators 1995) in further view of Tanaka (JP 01-245226).**

As to claim 1, Bird et al. discloses an image sensor pixel comprising a photosensitive element and a switching element. See figure 3. The photosensitive element and switching element comprise a layer of ITO formed over a layer of amorphous silicon. A silicon nitride layer covers the ITO layer at least partially. Since the silicon nitride layer covers the ITO layer, the ITO layer must be deposited prior to the silicon nitride layer.

Bird et al. does not disclose an intermediate layer of silicon oxide between the ITO layer and silicon nitride layer so that the switching element is completely shielded during manufacture. However, Tanaka et al. teaches forming a silicon oxide layer between an ITO layer and a silicon nitride layer in order to prevent the ITO layer from being reduced. See abstract. Note in figures 1 and 2, the silicon oxide layer 7 formed

between the ITO layer 6 and silicon nitride layer 13. It would have been obvious to one of ordinary skill in the art at the time of invention to form an intermediate silicon oxide layer between the ITO layer and silicon nitride layer in figure 3 of Bird et al. in order to prevent the ITO layer from being reduced.

As to claim 2, Bird et al. does not suggest using the disclosed image sensor as a fingerprint sensor. However, it would have been obvious to one of ordinary skill in the art at the time of invention to use the image sensor disclosed by Bird et al. as a fingerprint sensor. The good quality images that can be obtained by the disclosed image sensor array make it well suited for achieving the level of detail and accuracy required by a fingerprint sensor. See page 444.

**2. Claims 4-6 rejected under 35 U.S.C. 103(a) as being unpatentable over Bird et al. (Sensors and Actuators 1995) and Tanaka (JP 01-245226) as applied to claim 1 above and in further view of Tran et al. (U.S. 5,135,581).**

As to claim 4, Bird et al. does not disclose a doped ITO layer. Tran et al. teaches doping transparent conductive oxides such as ITO with a stabilizing gas such as H<sub>2</sub>. This reduces and stabilizes the resistivity and absorption characteristics of conductive oxide compositions formed at low temperatures. See column 3, lines 25-42. Tran et al. teaches depositing a conductive oxide onto photosensitive material at low temperatures to prevent diffusion of the oxide into the photosensitive material. See column 1, lines

54-65. It would have been obvious to one of ordinary skill in the art at the time of invention to dope the ITO layer in figure 3 of Bird et al. with a stabilizing gas in order to reduce and stabilize the resistivity and absorption characteristics.

Bird et al. does not disclose forming the silicon nitride layer using chemical vapor deposition. However, chemical vapor deposition (CVD) was a conventional technique that was well known for being cost-effective and reliable. It would have been obvious to one of ordinary skill in the art at the time of invention to form the silicon nitride layer using chemical vapor deposition because it was cost-effective and reliable.

As to claim 5, Tanaka et al. discloses forming the silicon oxide layer prior to forming the silicon nitride layer. See abstract and figure 1.

As to claim 6, Tanaka et al. teaches completely covering the ITO layer with the silicon oxide layer. Therefore, the ITO layer would be protected during manufacture of the silicon nitride layer.

#### ***Response to Arguments***

Applicant's arguments with respect to claims 1, 2 and 4-6 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Chung whose telephone number is (571) 272-2288. The examiner can normally be reached on Monday-Friday from 8:30 am to 5:00 pm.



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